

AMENDMENTS TO SPECIFICATION

Please substitute paragraph [0001] with the following amended paragraph:

The invention relates to the electronic and optoelectronic arts. It is especially applicable to the packaging of light emitting diodes ([[LED's]] LEDs) and will be described with particular reference thereto. However, the invention will also find application in the packaging other electronic and optoelectronic devices, such as photodetectors, signal receivers, vertical cavity surface emitting lasers (~~VCSEL's~~ VCSELs), photovoltaic devices, and the like.

Please substitute paragraph [0002] with the following amended paragraph:

Light emitting diodes (~~LED's~~) find application in fiber optical communications, lighting applications, display applications, and other applications where a compact, low voltage, rugged, and high efficiency light source is advantageous. In many LED applications, a plurality of ([[LED's]] LEDs) are advantageously arranged into an array or other pre-determined arrangement comprising similar or dissimilar LED types. In lighting or display applications, ([[LED's]] LEDs) emitting in the red, green, and blue regions are preferably closely packed to form a color "pixel" that blends the three colors. In this manner white light can be generated. Alternatively, by selectively varying the optical output intensity of the three colored ([[LED's]] LEDs), a selected color can be generated. An array of such "pixels" can form a color display or an illuminating surface emitting white light, among other applications.

Please substitute paragraph [0003] with the following amended paragraph:

The prior art includes fabrication of LED arrays on-chip. In this approach, semiconductor layers comprising the ([[LED's]] LEDs) are generated on a substrate, usually a semiconductor substrate, and individual ([[LED's]] LEDs) of the array are isolated by etching mesas in the LED layers. This approach is limited in application. The ([[LED's]] LEDs) are typically required to be all of one type. The choice of substrate is limited to those compatible with the semiconductor layer generation method. Many commercial ([[LED's]] LEDs) are formed from III-V compound semiconductor layers, and

the substrates which are used for the growth of such layers, typically including GaAs and InP wafers, sapphire substrates, and the like, are often expensive, fragile, and of limited lateral area.

Please substitute paragraph [0004] with the following amended paragraph:

A much more flexible approach is to fabricate discrete LEDs using any convenient method, and then to bond the discrete LEDs to a host substrate to form the LED arrangement thereon. In this manner dissimilar LEDs, such as red, green, and blue LEDs comprised of different material layers, can be advantageously combined. The choice of substrate is greatly expanded. However, the individual LEDs are electrically isolated, so that intricate wire bonding or other electrical interconnecting methods are typically applied to complete the array. Additionally, a different host substrate shape and electrical interconnect pattern is needed for each distinct LED arrangement, which limits the standardization of parts and complicates array manufacturing.

Please substitute paragraph [0005] with the following amended paragraph:

The present invention contemplates an improved modular mounting assembly for forming arrays of LEDs and other components.

Please substitute paragraph [0012] with the following amended paragraph:

In accordance with another aspect of the present invention, the at least one first optoelectronic component includes a plurality of light emitting diodes (LEDs) disposed on the substrate. The printed circuit board includes an electrical path that electrically interconnects the LEDs disposed on the substrate.

Please substitute paragraph [0013] with the following amended paragraph:

In accordance with another aspect of the present invention, the thermally conductive layer has depressions in which the LEDs are arranged, and the printed circuit board has holes arranged to allow the LED light emission to pass

through.

Please substitute paragraph [0017] with the following amended paragraph:

In accordance with another embodiment of the present invention, a modular mounting assembly for connecting a plurality of light emitting diodes ([[LED's]] LEDs) in a selectable electrical and spatial arrangement is disclosed. A plurality of substrates are provided. Each substrate has at least one LED fixedly arranged thereon, and a plurality of connectors arranged thereon that are in electrical communication with the at least one LED. The plurality of substrates are arranged in a spatial arrangement having selected pairs of connectors in electrical communication with each other providing an electrical arrangement between the plurality of [[LED's]] LEDs.

Please substitute paragraph [0050] with the following amended paragraph:

With reference now to FIGURES 3 and 4, the substrate **12** is described. Each substrate **12** has two LED components **14a** and **14b** arranged thereon. The [[LED's]] LEDs **14a**, **14b** can be similar [[LED's]] LEDs, e.g. two similar LED components that both emit white light. Alternatively, the [[LED's]] LEDs **14a**, **14b** can be dissimilar LED components, e.g. [[LED's]] LEDs of different colors, different intensities, different angular distributions, etc.

Please substitute paragraph [0053] with the following amended paragraph:

With continuing reference to FIGURES 3 and 4, the PC board **24** advantageously facilitates electrical connections to the components. A plurality of PC board traces connect the [[LED's]] LEDs **14a**, **14b** to the connectors **16** and optionally also connect the [[LED's]] LEDs **14a**, **14b** to each another. For example, a trace **40** can be used to interconnect the LED's **14a**, **14b** electrically in series. The electrodes (not shown) of the LED components **14** are connected to the PC board traces **40** using wire bonds or other means (not shown) that are well known to those of ordinary skill in the art. In one embodiment, the connectors **16** are formed into the edges of the PC board **24** so that the traces advantageously directly connect to the electrical conductor members comprising the connectors **16**, and the connectors **16** are readily accessible at the

edges of the substrate **12**. In the illustrated exemplary embodiment of FIGURE 3, there are four connectors **16**, and each connector has five conductor members **1**, **2**, **3**, **4**, and **5**.

Please substitute paragraph [0054] with the following amended paragraph:

With reference now to FIGURE 5, an electrical circuit schematic is shown corresponding to the exemplary substrate **12** of FIGURES 3 and 4. In the illustrated exemplary embodiment of FIGURE 5, the ~~[[LED's]]~~ LEDs **14a**, **14b** are connected in series on the substrate **12**. The anode **44** and the cathode **46** of the series LED combination **14a**, **14b** are accessible at connector conductor members **1** and **5**, respectively. Although only two of the five conductor members are directly connected to the components in the exemplary substrate **12**, it will be appreciated that providing additional conductor members, e.g. unattached members **2**, **3**, and **4** advantageously facilitates adding additional components, such as additional ~~[[LED's]]~~ LEDs, to the substrate **12** and enhances the modularity of the system. Additionally, at least one conductor member is reserved as a circuit ground. In the exemplary embodiment of FIGURES 3 and 5, conductor member **4** is reserved as the ground conductor. Of course, it will also be recognized that other conductor designations can be made, and additionally more or fewer than five conductor members can be included on each connector **16**. However, for a given modular mounting assembly some standardization of the number and designations of the conductors is highly advantageous.